OSRTI Management and Analytical Support
SMALL BUSINESS CONTRACT
EP-W-13-016

TITLE: Enhancing Radiological Laboratory Incident Response Capacity and Capability – Rapid Radiochemical Methods, Training, Mobile Lab Assessments and PT Studies
RFO Number: 0014

29 July 2014 Modification: Addition of Task 10 (with estimated LOE at 75 hours for this Task). All other tasks are unaltered.

TASK ORDER STATEMENT OF WORK

I. BACKGROUND

The mission of EPA is to protect human health and the environment. OSWER is an Agency component that is responsible for programs articulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986; the Resource Conservation and Recovery Act (RCRA) and amendments; and other legislation and Agency directives related to the characterization, remediation, and monitoring of solid and hazardous wastes. OSWER provides policy, guidance and direction for the Agency's emergency response and waste programs. It develops guidelines for the land disposal of hazardous waste and underground storage tanks. It provides technical assistance to all levels of government to establish safe practices in waste management. It administers the Brownfields program, which supports state and local governments in redeveloping and reusing potentially contaminated sites. It also manages the Superfund program, which responds to abandoned and active hazardous waste sites and accidental oil and chemical releases. Finally, it encourages innovative technologies to address contaminated soil and groundwater. The mission of the Office of Superfund Remediation and Technology Innovation (OSRTI) is to return contaminated areas of land associated with Superfund sites to communities for safe reuse in a healthy environment.

In EPA's *Assessment of Nationwide Laboratory Surge Capacity Required to Support Decontamination of Chemical, Biological, and Radiochemical – nuclear Agents* an analysis of the sample demand resulting from a radiological dispersion device (RDD) scenario in an urban business district relative to the nation's radioanalytical laboratory capacity was performed. The radioanalytical sample demand was project to be more than 350,000 samples over a 12 month period. An analysis of the nation's existing radiological laboratory capacity relative to this scenario based sample demand revealed a significant gap in laboratory capacity. The need to determine the nature and extent of contamination and to evaluate the effectiveness of decontamination activities in a timely manner to support consequence management decisions needed to minimize the health and economic impacts of an RDD detonation will result in sample throughput demands orders of magnitude greater than laboratories currently experience.

As noted in the Scope and Application section of the *Standardized Analytical Methods (SAM) for Use During Homeland Security Events* (Revision 2.0) document the methods in SAM are to be used to: evaluate the nature and extent of contamination; and evaluate the effectiveness of decontamination. Revision 2.0 of SAM has several radiochemical methods for select radionuclides for a variety of matrices. The radiochemical methods in SAM are well established proven methods that have been used for compliance monitoring and site-cleanup activities for typical environmental matrices such as soil, water, air filters, etc. The methods were primarily developed for precise measurements at low concentration with little attention given to sample processing turn-around-time. Typical turn-around-times for many of

the radiochemical methods in SAM are measured in days to weeks depending on the size of the sample batch. Rapid radiochemical methods for select radionuclides in typical environmental matrices as well as urban materials would significantly improve laboratory throughput resulting in more rapid data delivery to decision makers during characterization, decontamination and clean-up activities. In addition on-site training on recently developed rapid radiochemical rapids and laboratory radiological incident response guides at select radiological laboratories would increase the nation's radioanalytical capacity and capability resulting in high quality decision makers in the event of a major radiological or nuclear incident.

II. SCOPE OF WORK

The scope of this Task Order involves the development and validation of rapid radiochemical methods for select radionuclides and matrices, conducting radiological laboratory training at select State radiological laboratories and to perform an assessment of the federal and state mobile radiological laboratories. In meeting the requirements of this Work Assignment, the Contractor shall be in a support role and not be involved in the development of (or decisions relative to) EPA policy, nor in any other activity that is an "inherently Government function".

III. PERIOD OF PERFORMANCE

The period of performance for this Task Order shall be date of award through December 15, 2014.

IV. TASKS

Task 1 Develop and conduct single-laboratory validation study and produce rapid radiochemical methods for Cf-252 in soil, air filters, and swipes

The contractor shall use a Cf-252 in water method provided by the WAM and develop rapid methods for Cf-252 in soil, air filters and swipes. The contractor shall provide the laboratory (which will be located on the East Coast) selected by the WAM with written rapid methods for soil, air filters and swipes, a method validation protocol consistent with the approach outlined in MARLAP, standards and reagents needed for the validation study and any technical assistance required by the laboratory based on the results during the validation study. The contractor shall conduct four to six separate trips to the laboratory to provide technical support. This will involve one contractor for approximately 4 days per trip. The contractor shall prepare final versions of the rapid methods in a format ready for publication which will include performance data such as detection capability, measurement uncertainty, precision, etc.

Task 2 Develop and conduct a single-laboratory study and produce a rapid method for Cm-244 in water

The contractor shall develop a rapid radiochemical method for Cm-244 in water. The contractor shall provide the laboratory (which will be located on the East Coast) selected by the WAM a written rapid radiochemical method for Cm-244 in water, a method validation protocol consistent with the approach outlined in MARLAP, standards and reagents needed for the validation study and any technical assistance required by the laboratory based on the results during the validation study. The contractor shall conduct four to six separate trips to the laboratory to provide technical support. This will involve one contractor for approximately 4 days per trip. The contractor shall prepare a final version of the rapid radiochemical method for Cm-244 in a format ready for publication which includes performance data such as detection capability, measurement uncertainty, precision, etc.

Task 3 Conduct radiological laboratory training at 4 state radiological laboratories

The contractor shall provide two one-week on-site training courses using a maximum of three instructors at four state radiological laboratories. The location of the four state radiological laboratories will be in the continental United States and shall be provided by the WAM no later than October 7, 2013. Approximately half of the state laboratories will be on the East Coast and the other half will be on the West Coast. The training shall include: radiological contamination control, samples screening, rapid methods for select radionuclides in environmental matrices, incident response laboratory operation, method validation for radiological incident response and sample preparation activities. The training shall be based on Guide for Laboratories – Identification, Preparation, and Implementation of Core Operations for Radiological or Nuclear Incident Response, EPA-402-R-10-002, Radiological Laboratory Sample Screening Analysis Guide for Incidents of National Significance, EPA-402-R-09-008, Method Validation Guide for Qualifying Methods Used by Radiological Laboratories Participating in Incident Response Activities and other recently published radiological laboratory incident response guides and recently published radiochemical rapid methods produced by the contractor under a previous Work Assignment.

Task 4 Develop and single-laboratory validate a Gross Alpha and Gross Beta for the analysis of Flowback and Produced Water from Hydraulic Fracturing Operations (FPWHFO)

A portion of this task was performed by this contractor in a previous contract. The contractor shall use the results from that work and utilize it to complete the task.

This task involves developing and single-lab validating a Gross Alpha and Gross Beta method for measuring FPWHFO samples for gross alpha and gross beta. The radionuclides expected to predominate levels of radioactivity in these FPWHFO samples are natural uranium, thorium-232, radium-226 and decay products and potassium-40. This proposal will focus on one specific FPWHFO matrix to be provided by ORD.

The contractor shall develop a written method for Gross Alpha and Gross Beta analysis on FPWHFO samples taking into account the many interferences in an FPWHFO sample. The contractor shall evaluate and select the radioanalytical laboratory to conduct the validation study. The contractor shall provide the laboratory with a written method, a method validation protocol consistent with the approach outlined in the Multi-Agency radiological Laboratory Analytical Protocols (MARLAP) Manual, standards, reagents and validation samples and any technical assistance required by the laboratory based on the results of the validation study. The desired measurement quality objectives are a detection limit of 3 pCi/L for gross alpha and 4 pCi/L for gross beta activity. Upon validation of the method the contractor shall prepare final versions of the methods in a format ready for publication which will include performance data from the validation study. The contractor shall also prepare a summary report of the validation study which will include: the performance data generated; calculated results for key method performance indicators including the method uncertainty, key observations from the laboratories conducting the validation study.

Task 5 Develop and conduct several key steps of the validation of bitumen/aggregate material for Am-241, Pu-239, Pu-239/240, U isotopes, Sr-90 and Ra-226

The contractor shall develop a method for the analysis of Am-241, Pu-239, Pu-239/240, U isotopes, Sr-90 and Ra-226 in bitumen/aggregate urban material. The contractor shall develop a Validation Study Test Sample Design in accordance with the MARLAP manual. The contractor shall develop an approach for sample preparation and dissolution of the complex matrix. The contractor shall perform preliminary testing and optimization of the method in accordance with MARLAP and will conduct the verification of

detection capability of the method. The contractor shall provide the laboratory (which will be located on the East Coast) selected by the WAM with the written methods for the select radionuclides along with the Validation Study Test Sample Design and any technical assistance required by the laboratory based on the results of preliminary testing and optimization of the method and the data from the verification of detection capability of the method. The contractor shall conduct six trips to the laboratory to provide technical support. This will involve one contractor for approximately four days per trip.

Task 6 Develop a Report on the number, capability and capacity of federal and state mobile radiological laboratories in the country.

The contractor shall develop a report on the number, capability and capacity of federal and state mobile radiological laboratories in the country. For each mobile laboratory the contractor shall identify, at a minimum, the owner and usual location of the mobile laboratory, the nuclear counting equipment in the mobile laboratory, the staffing for the mobile laboratory, the radioanalytical tests performed by the mobile laboratory, provide an estimate of the capacity of the mobile laboratory and any information of the accreditation status and participation and results of PT studies conducted by the mobile laboratory over the past 3 years. The contractor shall also attempt to obtain any audits conducted over the last 3 years of the mobile laboratory.

Task 7 Participate in Conference Calls

The contractor will assign qualified technical staff to participate in up to 10 two to three hour teleconferences with EPA, at dates and times to be determined through technical direction. EMS will prepare brief summary reports of the action items and highlights of each teleconference as necessary. EMS will incorporate any comments received from EPA and deliver a final teleconference report, by e-mail, within five business days of receiving EPA's comments.

Task 8 Develop and conduct single-laboratory validation study and produce rapid methods for Cm-244 in soil, air filters, and swipes

The contractor shall develop rapid methods for Cm-244 in soil, air filters and swipes. The contractor shall provide the laboratory (which will be located on the East Coast) selected by the WAM with written rapid methods for soil, air filters, and swipes, a method validation protocol consistent with the approach outlined in MARLAP, standards and reagents needed for the validation study and any technical assistance required by the laboratory based on the results during the validation study. The contractor shall conduct four to six separate trips to the laboratory to provide technical support. This will involve one contractor for approximately 4 days per trip. The contractor shall prepare final versions of the rapid methods in a format ready for publication which will include performance data such as detection capability, measurement uncertainty, precision, etc.

Task 9 Develop and single-laboratory validate Gamma Spectrometry method for the analysis of Flowback and Produced Water from Hydraulic Fracturing Operations (FPWHFO)

The contractor shall develop and single-laboratory validate a gamma spectrometry method for FPWHFO samples. The contractor shall provide the laboratory (which will be located on the East Coast) selected by the WAM with a written gamma spectrometry method, a method validation protocol consistent with the approach outlined in MARLAP, standards and reagents needed for the validation study and any technical assistance required by the laboratory based on the results during the validation study. This task will focus on one specific FPWHFO matrix to be provided by EPA ORD NERL. The contractor shall conduct four to six separate trips to the laboratory to provide technical support. This will involve one contractor for approximately 4 days per trip. The

contractor shall prepare final versions of the rapid methods in a format ready for publication which will include performance data such as detection capability, measurement uncertainty, precision, etc.

Task 10 Quality Gap Analysis of NCRFO

The contractor shall conduct a gap analysis of EPA's National Center for Radiation Field Operations (NCRFO) relative to EPA's QA requirements. The gap analysis and review will be limited to NCRFO's overall quality system; emergency response program; scanner van operations; and RadNet deployable monitor maintenance and operations. The gap analysis of the areas listed above shall consist of three phases.

In the first phase the contractor shall review NCRFO quality systems including the QMP, relevant QAMs, relevant SOPs and other documents which will be provided to the contractor by the WAM.

The second phase will involve an on-site visit to NCRFO located in Las Vegas, Nevada. The on-site visit will occur in August with the date provided by the WAM. The contractor shall spend a minimum of three days and a maximum of four days at the NCFRO facility. The on-site visit shall include a kick-off briefing to NCRFO management, QA Manager and relevant staff as determined by NCRFO management. During the visit the contractor shall interview appropriate NCRFO managers, the QA Manager and staff involved in the areas listed for the gap analysis. The contractor shall interview a minimum of ten members of the NCRFO staff (this is in addition to the interviews of NCRFO managers and the QA Manager) involved in the gap analysis focus areas listed above. The contractor shall provide a draft agenda for the on-site audit to the WAM who will in turn provide it to NCRFO managers and the QA Manager prior to the on-site visit. The contractor shall work through the WAM with NCRFO managers and the QA Manager to finalize the agenda. The contractor shall review all relevant records referenced in NCRFO quality systems documents while on site. At the conclusion of the visit the contractor shall provide an exit briefing to NCRFO manager, the QA Manager and staff as identified by NCRFO management.

The third phase of the gap analysis shall be a gap analysis report. The document shall detail all gap analysis results, including the identification of both major and minor gaps as well as recommendations on how to address identified gaps. The basis of gaps shall be the status of the areas previously identified in the task relative to EPA requirements as defined in EPA's Quality Documents which are available on EPA's website.

The contractor should assume two deliverables – one hardcopy, one electronic for Tasks 1, 2, 4, 5, 6, 8, 9 and 10. The schedule for the deliverables is provided below.

	Deliverable	Due Date
Task 1:	First draft of rapid methods for Cf-252 in soil, air filters, and swipes	April 30, 2014
	Final draft of rapid methods for Cf-252 in soil, air filters and swipes	August 29, 2014

Task 2:	First draft of Cm-244 method in water	March 28, 2014
	Final draft of Cm-244 method in water	September 10, 2014
Task 3:	Training at first State radiological laboratory	TBD in consultation with WAM and State radiological laboratory
	Training at second State radiological laboratory	TBD in consultation with WAM and State radiological laboratory
	Training at third State radiological laboratory	TBD in consultation with WAM and State radiological Laboratory
	Training at fourth State radiological laboratory	TBD in consultation with WAM and State radiological Laboratory – but not later than the week of September 15th.
Task 4:	First draft of gross alpha/beta method	December 20, 2013
	Final draft of gross alpha/beta method	February 28, 2014
Task 5:	First draft of method for bitumen/aggregate material	April 30, 2014
	Report on preliminary testing and optimization of the method and verification of the detection capability of the method	September 12, 2014
Task 6:	First draft on Radiological Mobile Labs	May 23, 2014
	Final draft on Radiological Mobile Labs	August 22, 2014
Task 7:	Participate in conference calls	TBD by WAM
Task 8:	**First draft of rapid methods for Cm-244 in soil, air filters and swipes**	**May 13, 2014**
	Final draft of rapid methods for Cm-244 in soil, air filters and swipes	**December 15, 2014**
Task 9:	**First draft of gamma spectrometry method**	**May 30, 2014**
	Final draft of gamma spectrometry method	**March 30, 2015**

Task 10: First draft of Gap Analysis	August 29, 2014
Final draft of Gap Analysis	September 17, 2014

V. POINT OF CONTACT

Dan Askren
Phone: 334.270.3422
National Analytical Radiation Environmental
Laboratory (NAREL), ORIA, OAR, USEPA
540 South Morris Avenue
Montgomery, AL 36115-2600

VI. TERMS AND CONDITIONS

The contractor shall submit a technical/price proposal within 20 calendar days of RFO.

The following additional terms and conditions are requirements of this task order:

Develop a Quality Assurance/Quality Plan

During the period of performance for this task order, the contractor shall conduct task order monitoring, quality assurance and management activities, including preparation of the monthly progress report, under this task. The contractor shall provide a written quality assurance/quality plan (QAPP) that will be used to ensure that deliverables are developed in a manner that is fully compliant with the QA procedures as indicated in the contract. The contractor should assume one QAPP for this task order.